Claims

1. An isolated polynucleotide comprising:
   (a) a polynucleotide encoding the polypeptide as set forth in SEQ ID NO:2;
   (b) a polynucleotide encoding the polypeptide as set forth in SEQ ID NO:4;
   (c) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:1;
   (d) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:3;
   (e) a polynucleotide comprising a nucleotide sequence that has at least 75% identity to the polynucleotide of any one of (a) to (d);
   (f) a polynucleotide comprising a nucleotide sequence that is capable of hybridising to the polynucleotide of any one of (a) to (d); or
   (g) a polynucleotide fragment of the polynucleotide of any one of (a) to (f).

2. The polynucleotide of claim 1, wherein said polynucleotide encodes a G-protein coupled receptor.

3. A polynucleotide probe or primer comprising at least 15 contiguous nucleotides of the polynucleotide of claim 1.

4. A vector comprising the polynucleotide of claim 1.

5. A host cell transformed or transfected with the vector of claim 4.

6. The host cell of claim 5 which is mammalian.

7. A process for producing a polypeptide comprising culturing the host cell of claim 5 under conditions sufficient for the expression of said polypeptide.

8. The process of claim 7, wherein said polypeptide is expressed at the surface of said host cell.

9. Polypeptides produced by the process of claim 7.

10. A membrane preparation of the cells of claim 8.

11. A polypeptide comprising:

(a) a polypeptide having the deduced amino acid sequence translated from the polynucleotide sequence in SEQ ID NO:1 or SEQ ID NO:3 and variants, fragments, homologues, analogues and derivatives thereof; or

(b) a polypeptide of SEQ ID NO:2 or SEQ ID NO:4 and variants, fragments, homologues, analogues and derivatives thereof.

12. A pharmaceutical composition for the treatment of a patient having need to upregulate a receptor, said pharmaceutical composition comprising the polypeptide of claim 11.

13. An antibody against the polypeptide of claim 11.

14. A pharmaceutical composition for the treatment of a patient having need to activate or inhibit a receptor, said pharmaceutical composition comprising the antibody of claim 13.

15. A method for identifying a compound that binds to the polypeptide of claim 11, said method comprising the steps of:

(a) contacting (i) a detectable compound known to bind to said polypeptide and (ii) a test compound with cells expressing said polypeptide or a membrane preparation of said cells;

(b) contacting the same amount of said detectable compound with the same amount of said cells or a membrane preparation of said cells under the same conditions as in step (a) but in the absence of said test compound; and

(c) comparing the amount of said detectable compound bound in steps (a) and (b), thereby identifying said test compound as a compound that binds to said polypeptide.

16. The method of claim 15, wherein said detectable compound is a nucleotide or nucleotide derivative.

17. A method for identifying a compound that binds to and activates the polypeptide of claim 11, said method comprising the steps of:

(a) contacting said compound with cells expressing on the surface thereof said polypeptide or a membrane preparation of said cells, said polypeptide being associated with a second component capable of providing a detectable signal in response to the binding of said compound to said polypeptide; said contacting being under conditions sufficient to permit binding to said polypeptide; and

(b) identifying said compound as binding to and activating said polypeptide by detecting the signal produced by said second component.

18. A method for identifying a compound that binds to and inhibits activation of the polypeptide of claim 11, said method comprising the steps of:

(a) contacting (i) a detectable first component known to bind to and activate said polypeptide and (ii) said compound with cells expressing on the surface thereof said polypeptide, or a membrane preparation of said cells, said polypeptide being associated with a second component capable of providing a detectable signal in response to the binding of said compound to said polypeptide; said contacting being under conditions sufficient to permit binding to said polypeptide; and

(b) identifying said compound as binding to and inhibiting activation of said polypeptide by determining whether said first component binds to said polypeptide by detecting the absence or otherwise of a signal generated from the interaction of said first component with said polypeptide.

19. A method of elucidating the three-dimensional structure of the polypeptide of claim 11, said method comprising the steps of:

(a) purifying said polypeptide;

(b) crystallising said polypeptide; and

(c) elucidating the structure of said polypeptide by X-ray crystallography.

20. A method of modelling the structure of the polypeptide of claim 11, said method comprising the steps of:

(a) aligning the sequence of said polypeptide with the sequence of rhodopsin;

(b) mapping the detected sequence differences of said polypeptide onto the known structure; and

(c) deriving a homology model of said polypeptide.